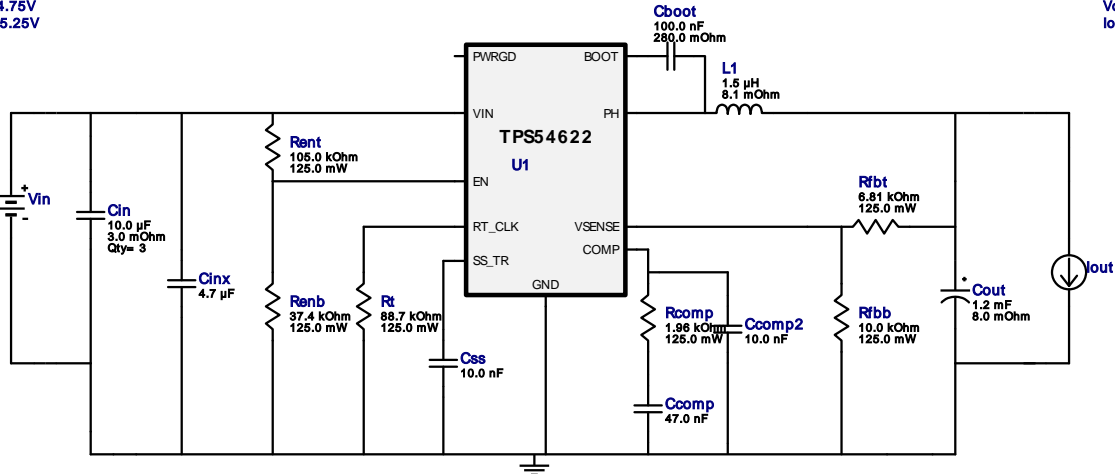


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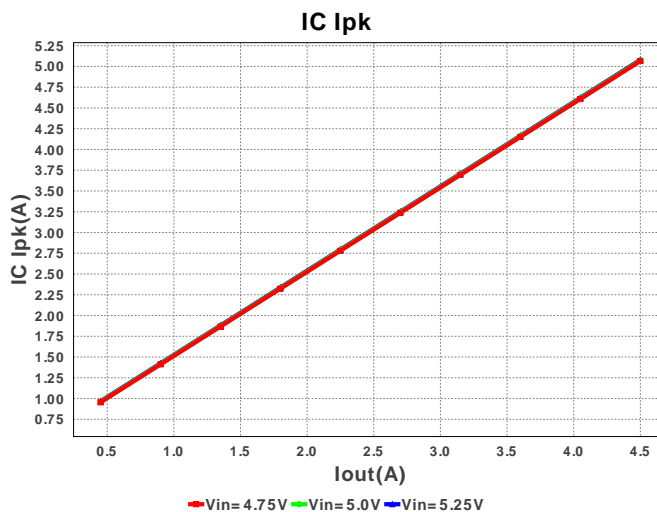
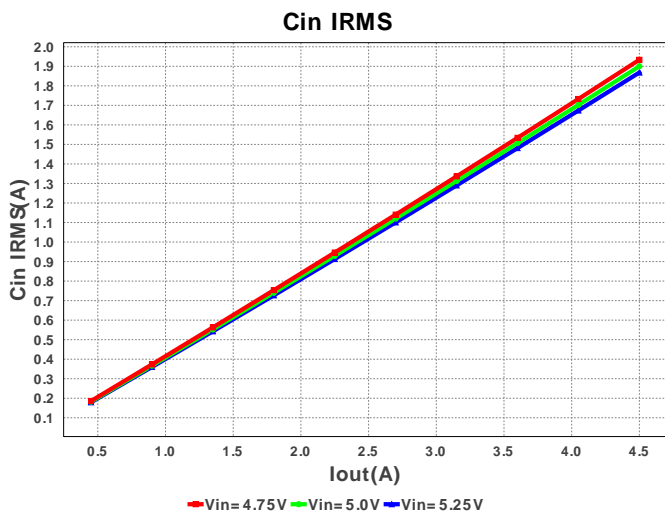
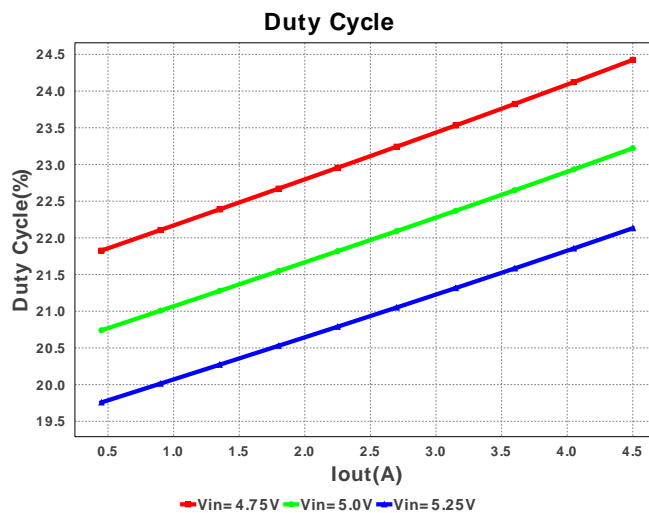
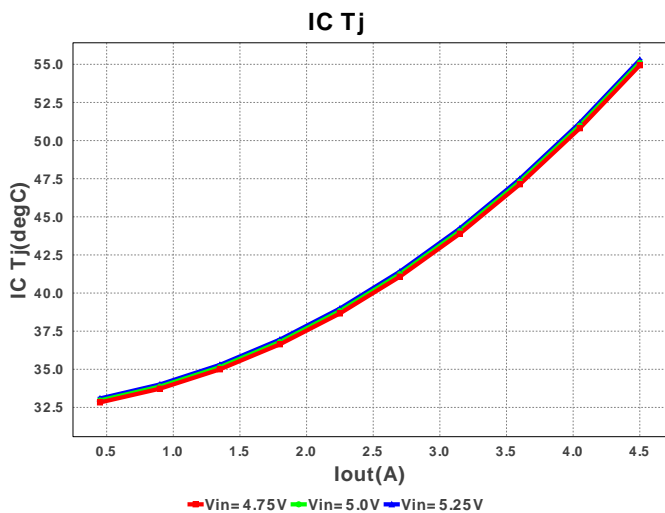
 Design : 523997/25 TPS54622RHLLR
 TPS54622RHLLR 4.75V-5.25V to 1.0V @ 4.5A

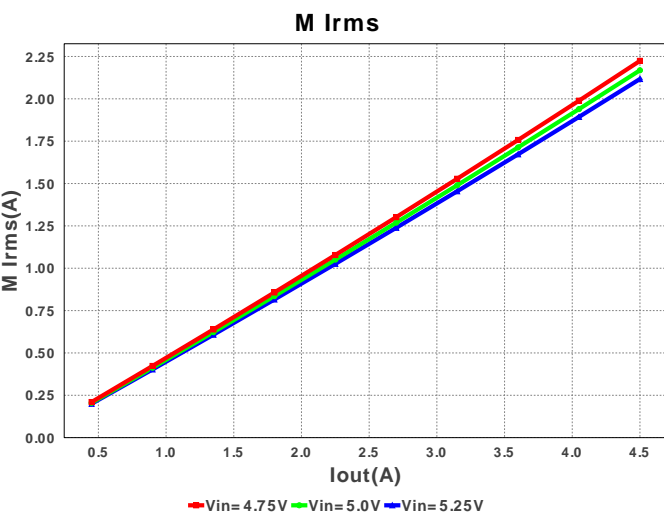
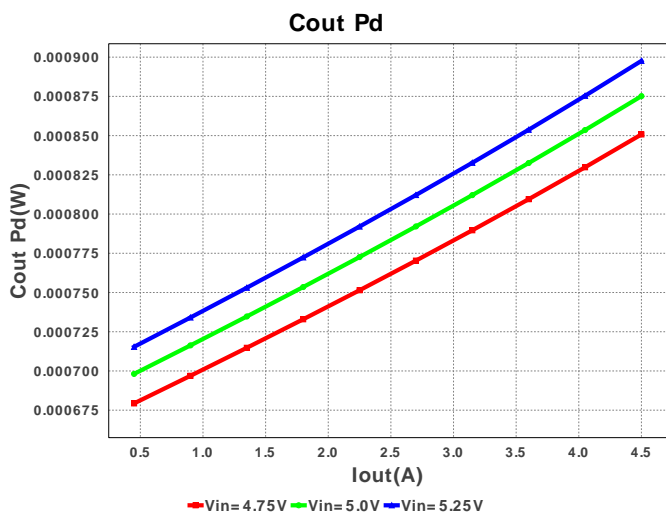
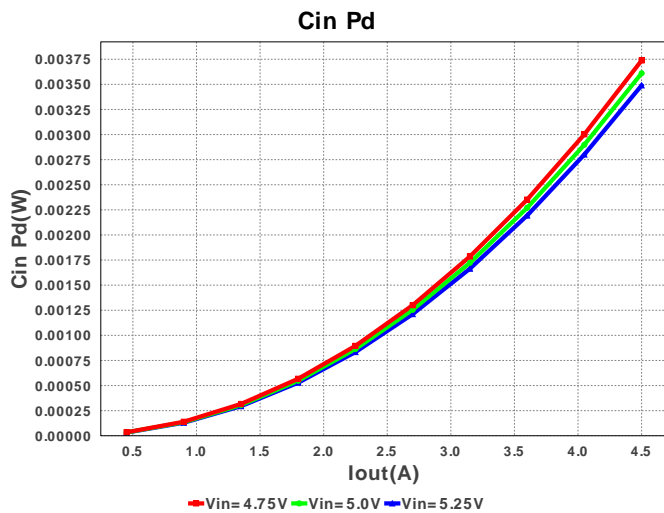
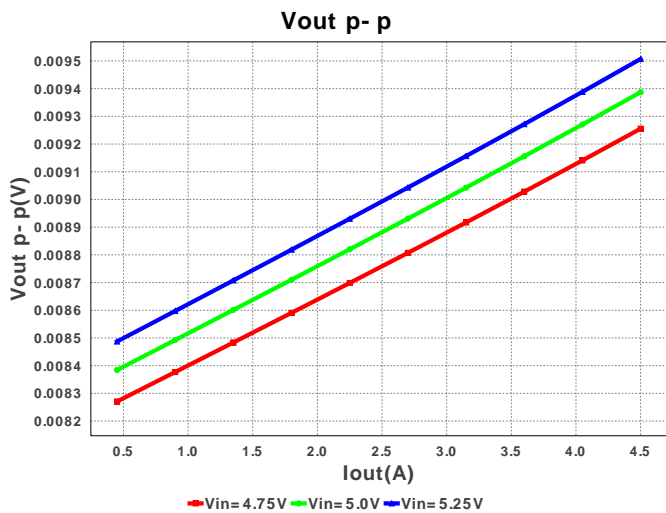
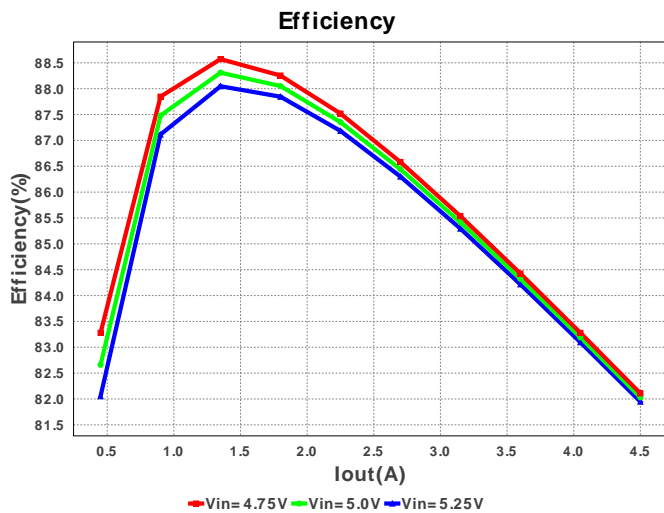
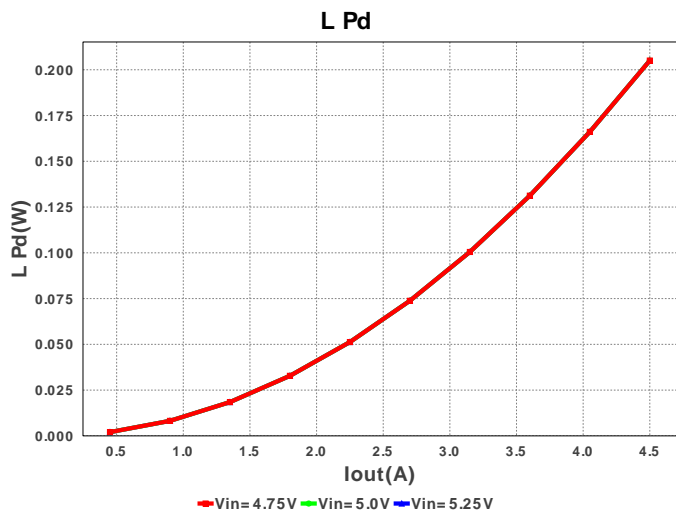
 VinMin = 4.75V
 VinMax = 5.25V

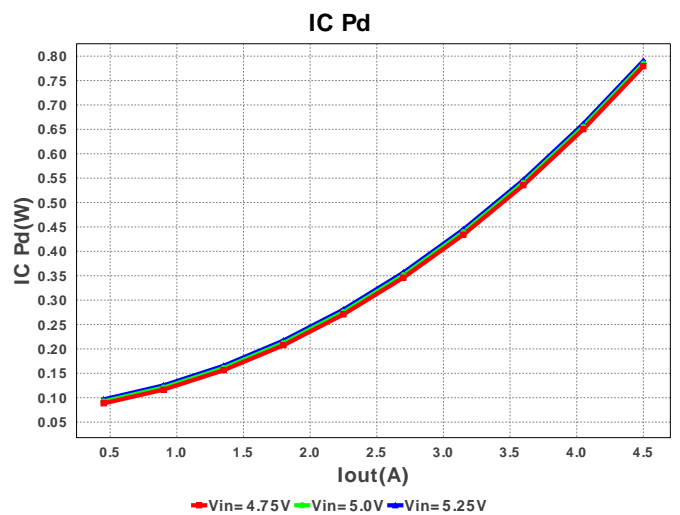
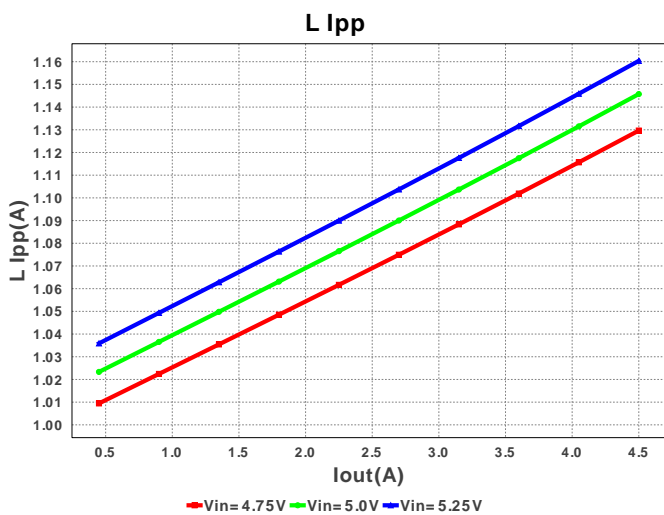
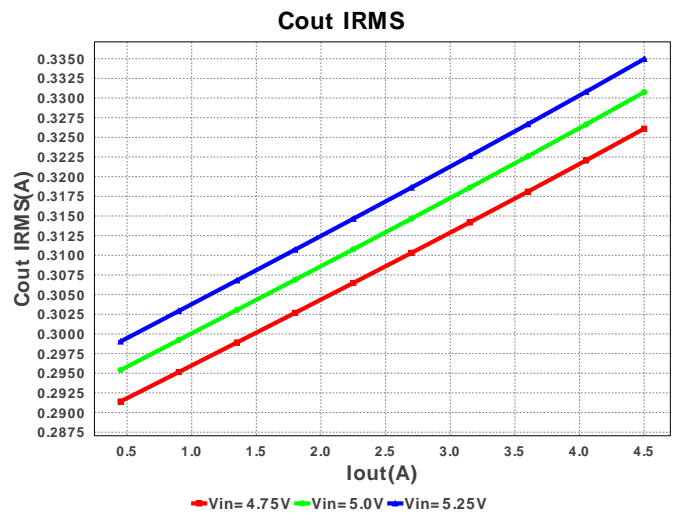
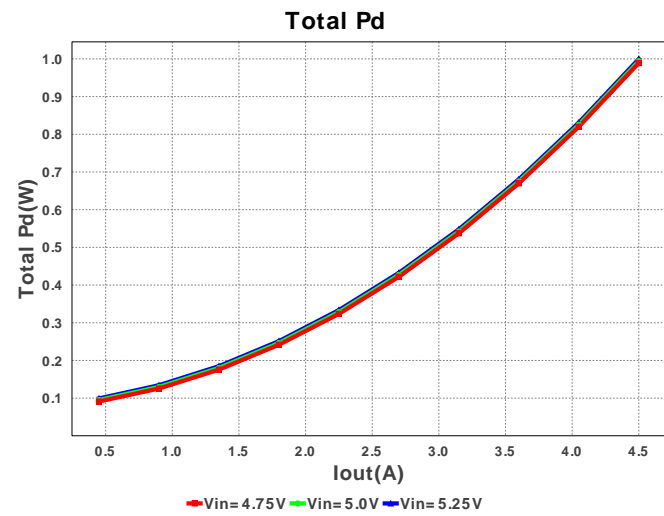
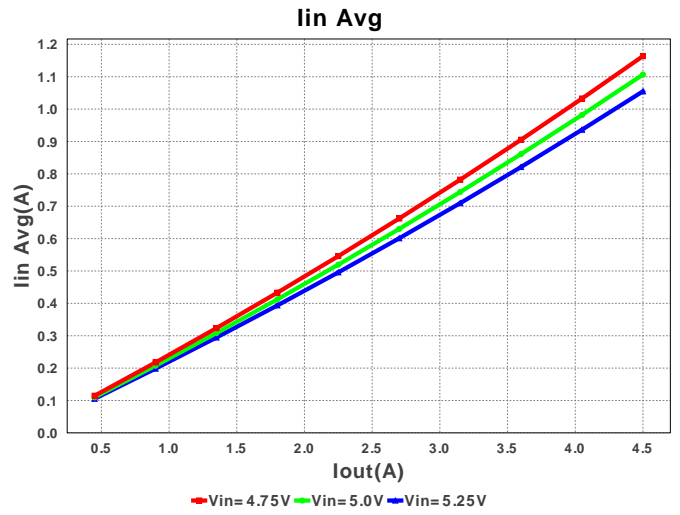
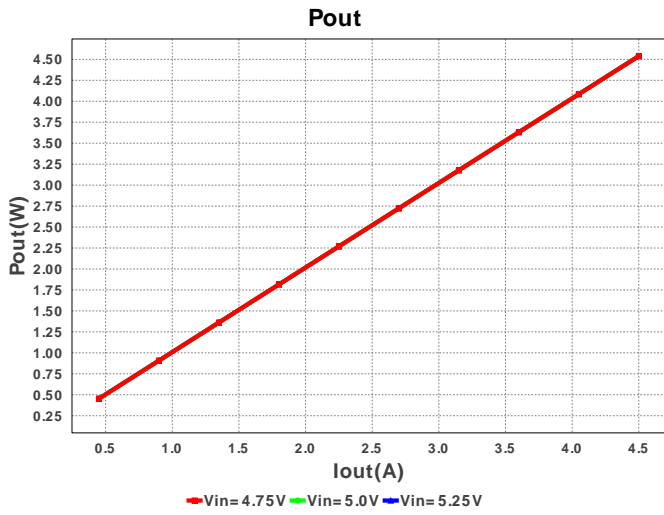
 Vout = 1.0V
 Iout = 4.5A

Electrical BOM

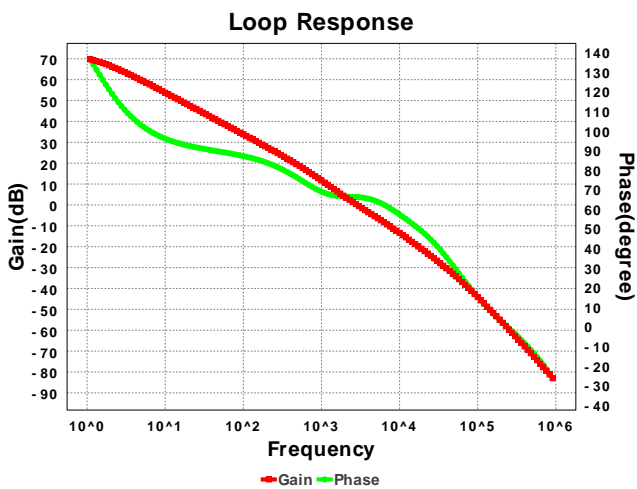
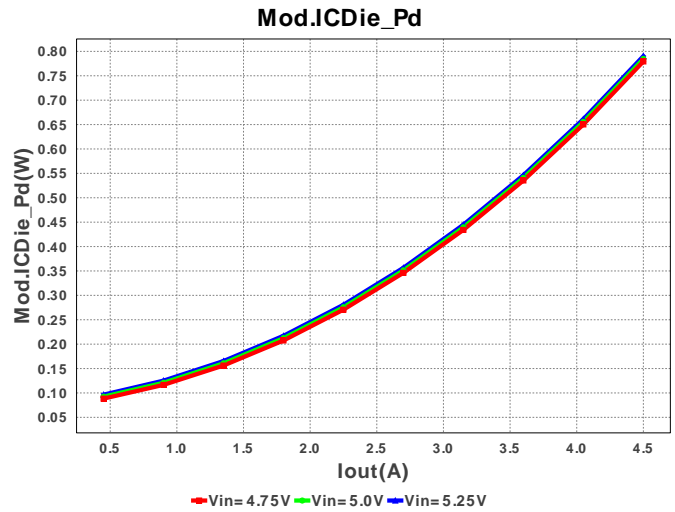
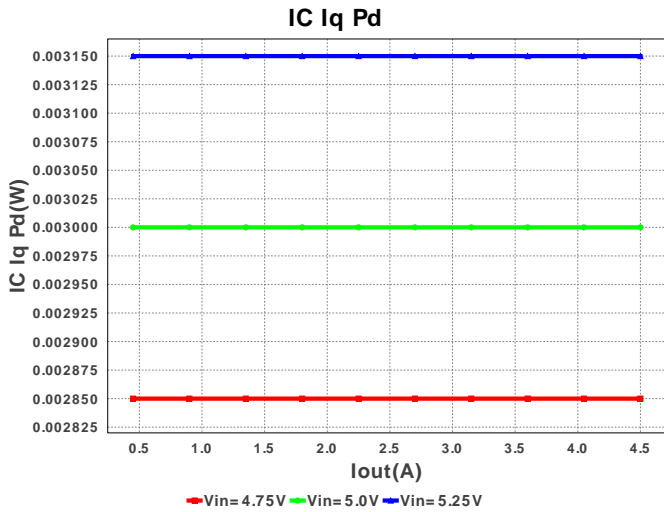
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
2.	Ccomp	Taiyo Yuden	TMK212B7473KD-T Series= X7R	Cap= 47.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
3.	Ccomp2	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
4.	Cin	Kemet	C0805C106K8PACTU Series= X5R	Cap= 10.0 µF ESR= 3.0 mOhm VDC= 10.0 V IRMS= 11.43 A	3	\$0.04	0805 7mm2
5.	Cinx	MuRata	GRM21BC81E475KA12L Series= 379	Cap= 4.7 µF VDC= 25.0 V IRMS= 0.0 A	1	\$0.04	0805 7mm2
6.	Cout	Panasonic	2SVPE1200M Series= 259	Cap= 1.2 mF ESR= 8.0 mOhm VDC= 2.0 V IRMS= 5.23 A	1	\$0.47	 CAPSMT_62_C10 74mm2
7.	Css	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7mm2
8.	L1	Coilcraft	MSS1038-152NLB	L= 1.5 µH DCR= 8.1 mOhm	1	\$0.49	 MSS1038 151mm2
9.	Rcomp	Panasonic	ERJ-6ENF1961V Series= 225	Res= 1.96 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7mm2
10.	Renb	Panasonic	ERJ-6ENF3742V Series= 225	Res= 37.4 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7mm2

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	Rent	Panasonic	ERJ-6ENF1053V Series= 225	Res= 105.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7mm2
12.	Rfbb	Panasonic	ERJ-6ENF1002V Series= 225	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7mm2
13.	Rfbt	Panasonic	ERJ-6ENF6811V Series= 225	Res= 6.81 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7mm2
14.	Rt	Panasonic	ERJ-6ENF8872V Series= 225	Res= 88.7 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7mm2
15.	U1	Texas Instruments	TPS54622RHLLR	Switcher	1	\$2.50	S-PVQFN-N14 22mm2









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.863 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	326.805 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	5.066 A	Current	Peak switch current in IC
4.	Iin Avg	1.048 A	Current	Average input current
5.	L Ipp	1.132 A	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	2.11 A	Current	Q Iavg
7.	BOM Count	17	General	Total Design BOM count
8.	FootPrint	341.0 mm2	General	Total Foot Print Area of BOM components
9.	Frequency	550.0 kHz	General	Switching frequency
10.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
11.	Pout	4.5 W	General	Total output power
12.	Total BOM	\$3.72	General	Total BOM Cost
13.	Vout OP	1.0 V	Op_Point	Operational Output Voltage
14.	Cross Freq	2.884 kHz	Op_point	Bode plot crossover frequency
15.	Duty Cycle	21.976 %	Op_point	Duty cycle
16.	Efficiency	81.766 %	Op_point	Steady state efficiency
17.	IC Tj	55.412 degC	Op_point	IC junction temperature
18.	ICThetaJA	32.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	4.5 A	Op_point	Iout operating point
20.	Phase Marg	66.616 deg	Op_point	Bode Plot Phase Margin
21.	VIN_OP	5.25 V	Op_point	Vin operating point
22.	Vout p-p	9.271 mV	Op_point	Peak-to-peak output ripple voltage
23.	Cin Pd	3.472 mW	Power	Input capacitor power dissipation
24.	Cout Pd	854.411 μW	Power	Output capacitor power dissipation
25.	IC Iq Pd	3.15 mW	Power	IC Iq Pd
26.	IC Pd	794.126 mW	Power	IC power dissipation
27.	L Pd	205.031 mW	Power	Inductor power dissipation
28.	Total Pd	1.004 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	4.5 A	Maximum Output Current
2.	Iout1	4.5 Amps	Output Current #1
3.	SoftStart	3.0 ms	Soft Start Time (ms)
4.	VinMax	5.25 V	Maximum input voltage
5.	VinMin	4.75 V	Minimum input voltage
6.	Vout	1.0 V	Output Voltage
7.	Vout1	1.0 Volt	Output Voltage #1
8.	base_pn	TPS54622	Base Product Number
9.	source	DC	Input Source Type
10.	Ta	30.0 degC	Ambient temperature
11.	UserFsw	550.0 kHz	Customer Selected Frequency

Design Assistance

1. **TPS54622** Product Folder : <http://www.ti.com/product/tps54622> : contains the data sheet and other resources.

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